Centrum Stosunków Międzynarodowych
Center for International Relations

Reports & Analyses 16/06

Oded Stark

Notes on Policy Repercussions of "The New Economics of the Brain Drain"

The Report has been published in cooperation with the German Marshall Fund of the United States within the project 'Transatlantic Security Challenges and Dilemmas for the European Migration Policy'.

CENTER FOR INTERNATIONAL RELATIONS
ul. Emilii Plater 25, 00-688 Warszawa
TEL.: (22) 646 52 67, FAX: (22) 646 52 58
www.csm.org.pl, info@csm.org.pl

Notes on Policy Repercussions of "The New Economics of the Brain Drain"

by

Oded Stark
Universities of Bonn, Klagenfurt, and Vienna; Warsaw University;
ESCE Economic and Social Research Center, Cologne and Eisenstadt

Mailing Address: Oded Stark, ZEF, University of Bonn, Walter-Flex-Strasse 3, D-53113 Bonn, Germany; E-Mail Address: ostark@uni-bonn.de

1. Whom to admit when the concern of the receiving country is the wellbeing of those who stay behind in the sending country

1.1 Let labor be the only production input in the home country H. Let the output, hence the gross earnings, of any worker in H be an increasing function both of the worker's own skill level and of the economy-wide average skill level. Let there be two types of worker - low ability, unskilled workers, and high ability, skilled workers. Let the fractions of the two types be $\frac{1}{2}$ each. Let the level of skill of the unskilled be $\underline{\theta}$, and let the level of skill of the skilled be θ^*, where $\theta^* > \underline{\theta}$. The low ability workers cannot acquire a skill level that is higher than $\underline{\theta}$. The high ability workers can optimally choose how much human capital to acquire. Let $\underline{\theta}$ be normalized at zero. Then, to begin with, the average skill level in H is

$$\frac{1\cdot 0 + 1\cdot \theta^*}{2} = \frac{\theta^*}{2} \quad . \tag{1}$$

Let the earnings of a worker whose skill level is $\theta \geq 0$ be higher in the developed country of destination, D, than in H. Let θ neither depreciate nor appreciate upon migration, and let the employers in D discern θ accurately and instantly upon a migrant's arrival. Hence, any H country worker will be better off if he migrates to D.

1.2 If a fraction of the unskilled leave, what will the effect be on those who stay behind? Suppose that $\frac{1}{4}$ of the unskilled leave. Then, the new average skill level at H will be

$$\frac{\frac{3}{4}\cdot 0 + 1\cdot \theta^*}{\frac{7}{4}} = \frac{4}{7}\theta^* \quad . \tag{2}$$

Since $\frac{4}{7}\theta^* > \frac{1}{2}\theta^*$, all those who stay behind gain by virtue of the new average skill level at H being higher.

1.3 Suppose, alternatively, that $\frac{1}{4}$ of the skilled workers leave. Clearly, the consequent average skill level at H will be

$$\frac{1\cdot 0+\frac{3}{4}\theta^{*}}{\frac{7}{4}}=\frac{3}{7}\theta^{*}. \tag{3}$$

Since $\frac{3}{7}\theta^{*}<\frac{1}{2}\theta^{*}$ (recalling (1)), the new average skill level is lower and hence, every H country worker who stays behind will therefore be worse off.

In a static framework, a D country that is concerned about the wellbeing of those who stay behind at H, if faced with a choice of either admitting unskilled workers from H or skilled workers from H, will thus want to admit unskilled workers from H.

1.4 But suppose that, in line with the "New Economics of the Brain Drain" (Stark, 2005), we have a dynamic setting: the prospect of migrating to D induces the skilled (high ability) workers to acquire more human capital, θ^{**}, such that $\theta^{**}=\frac{4}{3}\theta^{*}+\varepsilon$, where ε is any positive number, however small. Then, not only will the unskilled who stay behind gain from the migration of the skilled, they will gain *more* than they would have gained if $\frac{1}{4}$ of the unskilled migrated. If $\theta^{**}=\frac{4}{3}\theta^{*}+\varepsilon$, then the new average level of human capital at H will be

$$\frac{0\cdot 1+\frac{3}{4}\left(\frac{4}{3}\theta^{*}+\varepsilon\right)}{\frac{7}{4}}=\frac{4}{7}\theta^{*}+\frac{3}{7}\varepsilon>\frac{4}{7}\theta^{*}. \tag{4}$$

Hence, if $\theta^{**}>\frac{4}{3}\theta^{*}$, the unskilled who stay behind will indeed gain more.

1.5 The lesson to be drawn from this back-of-the-envelope exercise is that the migration policy of a benevolent D cannot be oblivious to the responses to the policy, to the incentives that the policy triggers, and to the impact of those responses on the wellbeing of those who stand to be affected by the policies indirectly.

2. How and why the migration policy of the receiving country will be "paradoxically" shaped when there are incentives to form human capital

2.1 Let there be n workers in H: $\frac{n}{2}$ low ability workers with skill level $\underline{\theta}=2$, and $\frac{n}{2}$ high ability workers with skill level $\theta^{*}=6$, such that skill level θ^{*} was formed when the probability of migration to D was $\frac{1}{4}$. The skill level $\underline{\theta}$ was formed independently of the probability of migration and cannot be affected by (changes in) that probability. The D country is not able to decipher the skill levels of individual migrant workers; it can only decide on the numbers that it admits. At the outset, the average skill level at H, $\overline{\theta}$, is 4, as is the average skill level of the migrant workers, assuming that the shares of the workers of the two skill types in a migration flow are the same as their shares in the population of H.

2.2 Let D seek to have the average skill level of the migrants at a level higher than 4, indeed, higher than 5 which is the current average level of human capital at D. If D could select, it would admit only those whose skill level is 6, thereby achieving its objective. But it cannot. So let us consider the repercussions of D *increasing* the probability of migration from $\frac{1}{4}$ to, say, $\frac{1}{2}$ such that, as a consequence, while those whose skill level is $\underline{\theta}$ do not acquire any additional human capital, the high ability workers now acquire $6+2+\varepsilon$ units of human capital. The new average level of human capital of the migrants (like that of those who stay behind at H), will be

$$\frac{2+(6+2+\varepsilon)}{2}=5+\tfrac{\varepsilon}{2}>5 \quad (5)$$

Thus, D benefits, the unskilled who stay behind benefit (since $5+\frac{\varepsilon}{2}>4$), and the migrating skilled benefit (assuming that they expose their $6+2+\varepsilon$ units of human capital to a superior rewarding production environment at D). If the skilled who stay behind are also better off, then everyone is better off.

Note that raising the probability of migration from $\frac{1}{4}$ to $\frac{1}{2}$ entails a doubling of the numbers of *both* the skilled migrants *and* of the unskilled migrants.

2.3 A lesson to be drawn from this back-of-the-envelope exercise is that the dynamic consequences of a migration policy could invite a policy that appears somewhat "paradoxical:" to overcome the adverse repercussions of the presence of unskilled workers in the incoming migration flow, *more* unskilled workers are admitted.

September 2006

Reference

Stark, Oded. 2005. "The New Economics of the Brain Drain," *World Economics* 6, pp. 137-140.

Center for International Relations

WHO WE ARE?

The Center for International Relations (CIR) is an independent, non-governmental think-tank. The Center's primary objective is to monitor the current international situation, giving special attention to Poland's foreign policy and to countries of strategic importance to its execution. CIR is especially focused on issues dealing with European integration, transatlantic relations and the relations with our neighbors, notably Germany, Russia, the Ukraine and Belarus. CIR's activity is of an analytic and educational nature. Over the last decade we have managed to build up a forum which has allowed for serious debate concerning foreign policy. In this way we propagate in Poland a modern view of international relations. Towards this end CIR prepares reports and analyses, holds conferences and seminars, publishes books and articles, carries out research projects and organizes public debate. The Center cooperates with many leading research institutions dealing in foreign affairs, worldwide. The President of the CIR is Mr. Eugeniusz Smolar.

OUR ADDRESS:

ul. Emilii Plater 25, 00-688 WARSZAWA
tel. (0048-22) 646 52 67, 646 52 68, 629 38 98
fax (0048-22) 646 52 58
e-mail: info@csm.org.pl
You are welcome to visit our website:
www.csm.org.pl

OUR SPONSORS:

- The Ford Foundation
- The Stefan Batory Foundation
- The Konrad Adenauer Foundation
- Robert Bosch Foundation
- German Marshall Fund of the United States
- The Foundation for Polish-German Cooperation
- Office of the Committee for European Integration
- European Commission
- Ministry of Foreign Affairs of Poland
- Ministry of Defense of Poland
- WestLB Poland S.A.

The Reports and Analyses of the Center for International Relations are available on-line at the CIR website: www.csm.org.pl